

**SIEMENS**

# **Monitor 44cm, 100/120HZ**

**SP**

## **Maintenance Instructions**

Monitor 44cm, 100/120HZ

Monitor 44 cm, 100/120 Hz

The protocol SPR2-230.105.01.02.02 is required for  
these instructions

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# **1 General information**

## **1.1 Requirements**

These maintenance instructions apply to the 100/120 Hz standard monitor, part number 30 64 581 B5310.

The monitor is a component of the system or system configuration. Maintenance for these systems or system configurations should be performed in accordance with the corresponding maintenance instructions.

## 1.2 Required documents

• Safety information according to ARTD, part 2	
• Maintenance protocol	SPR2-230.105.01..
• System binder for the system or system configuration	

### 1.3 Required tools, measurement and auxiliary devices

**NOTE**

The indicated articles are listed in the STC (Service Tools Catalog) unless otherwise stated (the STC is a component of the Spare Parts Catalog), except for those items identified with "\*".

Tool	For example	Material no.:
• Standard tool kit*		
• Set of Allen keys*		
• Protective conductor tester	Safety tester UNIMRT 1100	51 38 727
• Luminance meter	SPOTMETER for SM fit ACT	77 52 848

## 1.4 Emphasized text

<b>DANGER</b>	<b>DANGER</b> indicates when there is an immediate danger that leads to death or serious physical injury.
<b>WARNING</b>	<b>WARNING</b> indicates a risk of danger that may lead to death or serious physical injury.
<b>CAUTION</b>	<b>CAUTION</b> used with the safety alert symbol indicates a risk of danger that leads to slight or moderate physical injury and/or damage to property.
<b>NOTICE</b>	<b>NOTICE</b> used without the safety alert symbol indicates a risk of danger that if disregarded leads or may lead to a potential situation which may result in an undesirable result or state other than death, physical injury or property damage.

Fig. 1: Safety Notes

## 1.5 Safety information and protective measures

### 1.5.1 General safety information (in existing documents)



Risk of injury, death or material damage.

Note

- ⇒ The product-specific safety notes in these instructions,
- ⇒ The general safety information in TD00-000.860.01... and
- ⇒ The safety information in accordance with ARTD Part 2.
- ⇒ Non-compliance can lead to death, injury or material damage.

### 1.5.2 General electrical safety information



Electrical safety!

Non-compliance can lead to severe injury or even death and material damage.

- ⇒ After opening the covers, the parts under voltage are accessible. To avoid danger, disconnect the system from the power supply prior to opening the covers. Disconnect the power plug.
- ⇒ If an uninterruptible power supply (UPS) is installed in the system, the voltage output of the UPS must also be deenergized or the voltage output plug must be disconnected.
- ⇒ If work has to be performed under electrical voltage, the general safety information according to TD00-000.860.01... must be complied with.



Electrical voltage!

Non-compliance can result in material damage.

- ⇒ When working on the system, ESD regulations must be observed.

## 1.5.3 Radiation safety information



### X-ray radiation!

Non-compliance can lead to illness, irreversible damage to body cells and the genotype, severe injury and even death.

When performing work on the system during which radiation must be released, the radiation protection directives and the rules for radiation protection according to ARTD 02.731.02 must be complied with.

- ⇒ Please note:
- ⇒ Use available radiation protection devices.
- ⇒ Wear radiation protection clothing (lead apron).
- ⇒ Stay as far away as possible from the radiation source.
- ⇒ Release radiation only if necessary.
- ⇒ Set the radiation activity as low as possible. (low kV and mA values, short radiation time)
- ⇒ Release radiation for as short a time as possible.
- ⇒ Checks in which radiation must be released are identified by the radiation warning symbol.

## 1.5.4 Mechanical safety information



Risk of burns from hot parts or components! Non-compliance can result in minor to more severe burns, especially on the hands.

Parts and components (e.g., power components, cooling element, electromagnetic brakes) that can exceed 50 degrees Celsius during operation are accessible after the covers are opened.

- ⇒ To avoid burns, switch the system off prior to touching parts or components and allow at least 5 minutes of cooling.



Risk of injury from mechanical parts! Non-compliance can result in minor to more severe injury, especially to the hands.

Parts such as flat plugs, threaded bolts, cut-off cable ties and component edges that, if care is not taken, can cause crushing, abrasion and cuts to the skin, particularly to the hands, can be touched after the covers are opened.

- ⇒ Perform the required work with special care and attention to detail.
- ⇒ If needed, wear work gloves.

### 1.5.5 Safety information - risk of infection



**Risk of infection due to pathogens! Non-compliance can lead to severe injury and even death.**

**This product can be contaminated by infected blood or other bodily fluids.**

⇒ **Avoid all contact with blood or other bodily fluids!**

⇒ **Strictly observe the safety information in ARTD-002.731.37... regarding prevention of infectious diseases during customer service calls.**

### 1.5.6 Information on the protective conductor resistance test

Observe the instructions in the safety rules for installation and repair (ARTD-002.731.17 ...).

The protective conductor resistance is to be measured, documented, and evaluated during maintenance.

#### NOTE

**Evaluate the results by comparing the first measured value to the corresponding values documented during preceding maintenance procedures or safety checks.**

**A sudden or unexpected increase in the measured values may indicate a defect in the protective conductor connections - even if the limit value of 0.2 ohms is not exceeded.**

**(Protective conductor or contacts).**

The measurement must be performed according to DIN VDE 0751, Part 1 (see ARTD Part 2). In this case the protective conductor resistance for all touchable conductive parts must be measured during the normal operating state of the system.

Make sure that control cables or data cables between the components of the system are not mistaken for a protective conductor connection.

During the measurement, move the power cable and additional connection cables with an integrated protective conductor section by section to detect cable breaks.

Units with fixed power line connection:

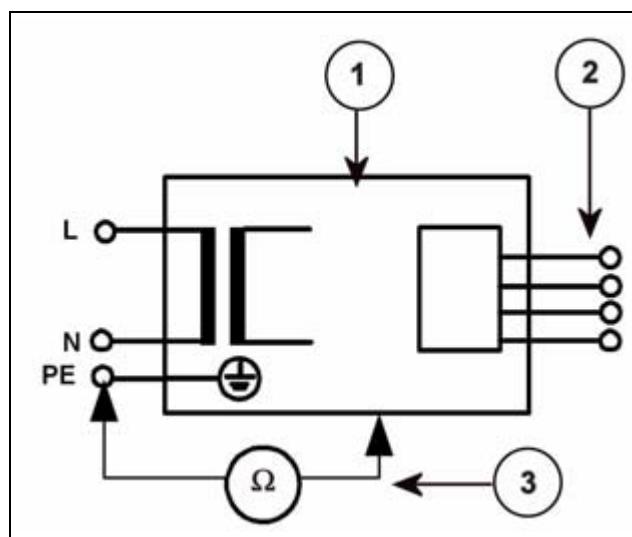
The protective conductor resistance of 0.2 ohms must not be exceeded.

Units with detachable power cable:

The protective conductor resistance of 0.2 ohms for the unit with a power line connection must not be exceeded.

The protective conductor resistance of 0.1 ohms for the detachable power line connection must not be exceeded.

The protective conductor resistance of 0.1 ohms between the ground contact of the unit plug and the touchable conductive unit parts may not be exceeded.



*Fig. 2: Measuring circuit for measuring the protective conductor resistance in units/systems that are permanently connected to the power supply net (according to DIN VDE 0751-1:2001-10, Fig. C3).*

Pos. 1 System

Pos. 2 Application part (not available)

Pos. 3 Measurement setup (integrated into measuring device)

The determined values, including the measuring points, must be recorded and assessed in the protective conductor resistance report.

The measuring procedure and the measuring device used (designation and serial number) are also to be documented.

### 1.5.7

### Information on measuring the system leakage current

#### NOTE

The system leakage current measurement is to be conducted and recorded as the repeat measurement during maintenance.

However, the first measured value must be newly determined and a new report must be created under the following conditions:

Lack of system leakage current measurement documentation

Local line voltage or line frequency deviating from the line voltage and line frequency documented in the report (e.g. in the event of a site/operator change)

Use of a different procedure for measuring the system leakage current from the one documented in the report.

For the purpose of traceability, reference to the new report is to be written on the old report. The reason for newly determining the first measured value is to be documented and confirmed with a name and signature.

Observe the instructions in the safety rules for installation and repair (ARTD-002.731.17 ...).

**WARNING**
**Electrical voltage!**

**Non-compliance can lead to severe injury and even death.**

- ⇒ **The system leakage current measurement may be performed on systems of protection class I only after the protective conductor test has been passed.**

### First measured value

The first measured value was already determined and documented in the system leakage current report. The measuring procedure was also recorded.

The measurement was performed with the recorded line voltage, line frequency and with the recorded measuring equipment.

### Measurement

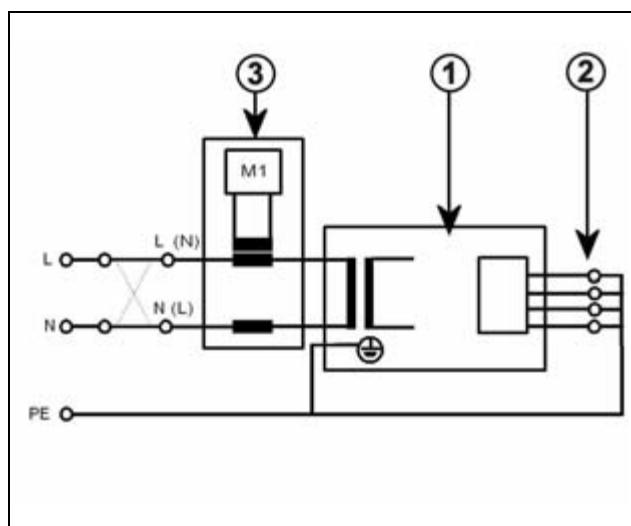
Perform the measurement according to DIN VDE 0751, Part 1 (see ARTD-002.731.17....), and record the determined value.

The measuring procedure indicated in the report must be used.

If the first measured value has to be newly determined (see note), a measuring procedure can be selected (direct measurement or differential measurement).

Measurement of the system leakage current according to the differential current method ([Fig. 3 / p. 12](#)) must be given preference, since this method is not dangerous to the person performing the measurement and other persons.

However, please note the minimum resolution of the leakage current measuring instrument and any additional manufacturer's data restricting the use of the measuring device.

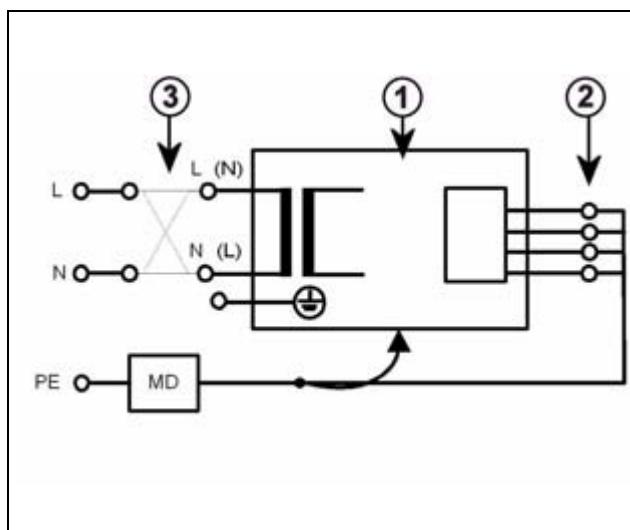


*Fig. 3: Measuring circuit for measuring the system leakage current according to the differential current method in compliance with DIN VDE 0751-1:2001-10, Fig. C6 for protection class*

1.

- Pos. 1 System
- Pos. 2 Application part (not available)
- Pos. 3 Measurement setup (integrated into measuring device)

If the direct measurement of the system leakage current is used ([Fig. 4 / p. 13](#)), the system must be insulated during the measurement and must not be touched.



*Fig. 4: Measuring circuit for direct measurement of the system leakage current in compliance with DIN VDE 0751-1:2001-10, Fig. C5 for protection class I.*

- Pos. 1 System
- Pos. 2 Application part (not available)
- Pos. 3 Measurement setup (integrated into measuring device)



## Electrical voltage!

**Non-compliance can lead to severe injury and even death.**

**No housing parts of the system may be touched during direct measurement of the system leakage current ([Fig. 4 / p. 13](#)).**

**⇒ Third-person access to the system must be prevented.**

The system must be switched on during measurement. Measuring devices with automated measuring sequences must therefore be set to manual measurement.

The highest value must be entered in the system leakage current report.

This value must not exceed the permissible leakage current values according to DIN VDE 0751-1:2001-10, Table F.1, line "general leakage current information", of 0.5 mA.

Measure and record the current line voltage. If the measured line voltage deviates from the nominal voltage, correct the measured value to the value corresponding to a measurement at the nominal value of the line voltage. This is also to be documented.

Document the measuring procedure (differential measurement or direct measurement) and the measuring device used (designation and serial number).

In the case of repeat measurements, the measured value is also to be evaluated.

**NOTE**

**Evaluate the results by comparing the first measured value to the corresponding values documented during preceding maintenance procedures or safety checks.**

**A sudden or unexpected increase in the measured values may indicate that a fault has occurred in the primary circuit of the power supply (damaged insulation, damage caused by water ingress or humidity, defective interference suppressor, etc.) - even if the limit value of 2.5 mA is not exceeded.**

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The evaluation is not necessary in the case of a new determination.

File the report sheet in the system folder or log book.

## 1.6 Descriptions of abbreviations

Abbrev.	Description
SI	Safety Inspection
SIE	Electrical Safety
SIM	Mechanical Safety
PM	Preventive Maintenance
PMP	Periodic Preventive Maintenance
PMA	Preventive Maintenance Adjustments
PMF	Preventive Maintenance, Operating Value Check, Function Check
Q	Quality Check
QIQ	Image Quality
QSQ	System Quality Check
SW	Software Maintenance

The steps identified by these abbreviations are part of the maintenance report and should be checked off upon completion.

**NOTE**

**The sequence for complete maintenance and inspection is described on the following pages.**

**Each work step must be performed on an annual basis, if not otherwise specified.**

**1.7 Maintenance interval**

12 months

## **2      Inspection of exterior and surroundings**

### **2.1    Inspection of exterior**

#### **PMP    Damage**

Inspect the monitor for damage, e.g. to the housing or to the finish.

## **2.2      Inspection of surroundings**

### **2.2.1    Power outlets**

#### **SIE      Damage**

For monitors connected directly to the power supply:

- Inspect the power outlet for damage.

#### **SIE      Line voltage**

- Measure the line voltage and compare this value to the line voltage for the monitor.

## 3 Safety inspection

### 3.1 Mechanical safety

#### **SIM Monitor mounting**

- Inspect the monitor mounting on the console (rotating/tilting console or monitor holder) for any mechanic damage.

#### **SIM Console mounting**

- Inspect the console (rotating/tilting console or monitor holder) for mechanical damage and correct mounting.

#### **SIM Warning labels**

- Ensure that all required warning labels are attached and in good condition.
  - ⇒ Replace any illegible labels.

#### **SIM ID labels**

- Ensure that all required ID labels are attached and in good condition.
  - ⇒ Replace any illegible labels.

### 3.2 Electrical safety

#### SIE Cables and plugs

- Check visible cables and plugs of the monitor for damage

#### SIE Protective conductor test

**NOTE**

The protective conductor test for the monitors is to be performed when these are externally mounted (e.g. on a wall console). It is not necessary to perform the protective conductor test for monitors mounted on the monitor trolley of the system if they are tested during the protective conductor test of the system (e.g., SIREMOBIL system).

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**NOTE**

Observe the notes on the protective conductor test in these instructions. The power cable of the monitor is to be moved section by section during the protective conductor test to detect cable breaks.

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- If covers were removed, they are to be reattached.
- Perform the protective conductor test according to ARTD-002.731.17.... .
- The protective conductor resistance of 0.2 ohms for the unit with a power line connection must not be exceeded.

The protective conductor resistance of 0.1 ohms for the detachable power cable must not be exceeded.

The protective conductor resistance of 0.1 ohms between the ground contact of the unit plug and the touchable conductive unit parts may not be exceeded.

- The determined values, including the measuring points, must be recorded and assessed.
- The measuring procedure and the measuring device used (designation and serial number) are also to be documented.

**NOTE**

Evaluate the results by comparing the first measured value to the corresponding values documented during preceding maintenance procedures or safety checks.

A sudden or unexpected increase in the measured values may indicate a defect in the protective conductor connection - even if the limit value of 0.2 ohms is not exceeded.

(Protective conductor or contacts)

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#### SIE Leakage current

**NOTE**

The leakage current measurement for monitors is to be performed when these are externally mounted (e.g. on a wall console) and externally connected to a power outlet/power supply.

It is not necessary to perform the leakage current measurement for monitors mounted on the monitor trolley of the system if they are part of the secondary circuit of the system power supply (e.g., SIREMOBIL Compact/Iso-C/POWERMOBIL/ARCADIS Varic/ARCADIS Orbic).

**NOTE**

Observe the leakage current measurement information in these instructions.

**WARNING**

**Electrical voltage!**

Non-compliance can lead to severe injury and even death.

⇒ The leakage current measurement may be performed on systems of protection class I only after the protective conductor test has been passed.

**WARNING**

**Electrical voltage!**

Non-compliance can lead to severe injury and even death.

⇒ No housing parts of the system may be touched during direct measurement of the leakage current (measurement setup according to Fig. 26). Third-person access to the system must be prevented.

- If covers were removed, they are to be reattached.
- Perform the leakage current measurement according to ARTD-002.731.17....
- The highest value must be entered in the leakage current report.
- This value must not exceed the permissible leakage current values according to DIN VDE 0751-01:2001-10, Table F.1, line "general leakage current information",
- of 0.5 mA.
- Measure and record the current line voltage. If the measured line voltage value deviates from the line voltage, correct the measured value to the value corresponding to a measurement at the nominal value of the line voltage. This is also to be documented.
- Document the measuring procedure (differential measurement or direct measurement) and the measuring device used (designation and serial number).
- In the case of repeat measurements, the measured value is also to be evaluated.

**NOTE**

Evaluate the results by comparing the first measured value and the values documented during preceding maintenance procedures or safety checks to the measured value.

A sudden or unexpected increase in the measured values may indicate that an error occurred in the primary circuit of the power supply (damaged insulation, damage caused by water ingress or humidity, defective interference suppressor, etc.) - even if the limit value of 0.5 mA is not exceeded.

## 4 Maintenance, operating value/functional inspection

### 4.1 Maintenance

#### PMP Cleaning the monitor

- Clean the monitor.
  - The monitor housing is made of plastic. Do not use any sharp-edged objects or chemical solvents to remove residues.
  - First disconnect the monitor from the power supply and wipe it off with a damp cloth or cotton swab.
  - Use water or a solution of water and a conventional household cleaner to dampen the cloth.
  - Never use cleaners such as acetone, ether, benzine, trichlorohydrocarbons, etc.

#### PMP Basic brightness/contrast setting

- Cover the ambient sensor of the monitor in a light-proof manner.
- Call up the "white square" test pattern on the system. The video level at the monitor input must be 1 V<sub>SS</sub> (300 mV Sync, 50 mV blanking signal and 650 mV B-signal).
- Use the luminance meter to adjust the luminance for black and white.
  - Black: 0.6 cd/m<sup>2</sup>, +/-0.2 cd/m<sup>2</sup>
  - White: 300 cd/m<sup>2</sup>, +/-20 cd/m<sup>2</sup>

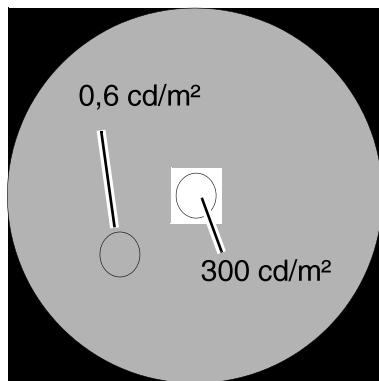


Fig. 1: "White square" test pattern

- Remove the light-proof cover from the ambient sensor.
- Shine a light on the ambient sensor. The luminance in the white field must reach the value >400 cd/m<sup>2</sup>.

**5      Final result/quality inspection and maintenance****SIE    IQ test**

- Perform the IQ test in accordance with the system or system configuration image quality test.
- This test is part of system maintenance and should be performed at the end of system maintenance. The image quality test does not need to be performed twice.

## **6      Changes to Previous Version**

Document was converted to DMS.

